Green Lake 2020 Neighborhood Plan
APPENDICES

These appendices are meant to accompany the Green Lake 2020 Neighborhood Plan, January 29th, 1998

Appendix A. Discussion of Transportation Action Items
A.1 Parking Inventory Map
A.2 List of Proposed Location for Wheel Chair Ramps
A.3 Green Lake 2020 Neighborhood Plan Traffic Analysis of Selected Intersections, by K2 & Associates, Traffic Consultants

Appendix B. Treasured Places

Appendix C. Green Lake Chronology

Appendix D. Additional Maps
Open Space Map, Existing Conditions
Existing Open Space and Service Areas Analysis Map

Appendix E. Zoned Capacity Analysis Narrative

Appendix F. Outreach Summary

Appendix A
Discussion o Transportation Action Items

GREEN LAKE 2020 PHASE II
NEIGHBORHOOD PLAN

DRAFT
TRANSPORTATION
STRATEGIC
PLAN

Prepared by

Green Lake 2020
Transportation
Committee

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The theme for the Green Lake transportation system is to develop a strategy that addresses the community's traffic congestion problems, enhances pedestrian and bicycle safety and circulation, encourages alternate transportation modes, and maintains community character. These and other community issues were discussed at community workshops held to identify problem locations and potential solutions. Seattle Transportation (SEATRAN) and Seattle Office of Strategic Planning (OSP) also provided input in refining community potential solutions within the community.

This report reviews traffic and transportation problems and potential solutions, and proposes strategies to mitigate traffic problems, enhance pedestrian and bicycle safety and access, and manage use of curb space.

KIS II. CREATE A FIRST-CLASS PUBLIC TRANSPORTATION SYSTEM

Public transit has an important role in the community's transportation system. Many commuters use transit to get to school or work. Furthermore, a small, but significant, proportion of Seattle residents own no car at all -- transit is their primary means of getting around. But, beyond the direct benefits to current transit users, service improvements are integral to the overall viability of our transportation system. As Green Lake and the rest of the city grows, travel will also increase. Unless a growing proportion of these trips is done by transit, traffic will increase to intolerable levels -- thereby exasperating the accompanying problems of congestion, parking availability, cut-through traffic, safety threats to cyclists and pedestrians, and environmental pollution.

Current transit services provided by METRO are considered inadequate within the community. Service is often infrequent, slow, and unreliable. There are no direct connections to many destinations. Of particular concern is the lack of east-west crosstown routes. The lake itself precludes a crosstown route along N 65th Street parallel to existing routes along N 45th Street and N 85th Street. Current planning for a regional transit system -- particularly a possible light rail station at Roosevelt -- must provide for connections to the Green Lake urban village, and other neighborhoods within the greater community. The prospect of a "Seattle Transit Initiative" provides another avenue for addressing Green Lake's transit needs.

Reduce Delays to Route #16 Express with a Transit Bypass Lane on Ravenna Boulevard In Front of the Park-and-Ride:

The Route #16 Express travels northwest up Ravenna Boulevard in during the evening commuting period. A bus stop is located just before the traffic light at Northeast 65th Street to serve the park and ride users. The traffic back-up at the light prevents the bus from discharging passengers until the green light. By the time passengers have unloaded, the light has already turned red, so the bus has to wait through two cycles. Parking restrictions at the bus stop are minimal, so often the bus cannot even pull completely out of the travel lane when it stops at the transit zone. While some of these cars are presumably transit users, many of the cars are observed to park overnight. Some have been observed with "For Sale" signs.

Parking should be prohibited along the east side of Ravenna between 65th Avenue and the park-and-ride entrance. This will eliminate 8-9 legal parking spaces. However, it will significantly improve travel speed and reliability for the #16 Express.

Provide a Protected Left-Turn Phase off of Wallingford Avenue N at N 45th Street to Reduce Delays to Route #48:

Route #48 is a valuable crosstown route connecting the urban villages of Greenwood, East Green Lake, Roosevelt, and the University District; and also serves the transfer point to Eastside buses at Montlake. It is particularly valuable to commuting university students. The northbound run takes a left-turn off of Wallingford Avenue N onto N 85th Street. However, there is no protected left-turn phase or pocket. Hence, buses can be delayed by heavy volumes of oncoming southbound traffic. A protected left-turn phase here would improve speed and reliability for northbound buses. One option is to allow a left-turn phase only for buses through transit priority.

Restore Direct Transit Service Between West Side of the Lake and Wallingford:

For many years, Route #6 ran down Aurora Avenue, Linden Avenue, West Green Lake Drive, and Stone Way. This provided direct service between the west side of Green Lake and the Wallingford urban village. However, Route #6 is scheduled for elimination as of February, 1999. The extra service hours will be applied to providing much-needed frequency improvements on Routes #16 (Northgate-East Green Lake-Fremont-Downtown) and #359 (Aurora Corridor). Nonetheless, residents west of lake miss the service connection to Wallingford. As new transit service is added in the future, this connection should be restored.

Provide Ten-Minute Headways on Routes #16, #48, and #359:

These three routes are very important to the Green Lake Community, providing service to numerous Seattle destinations, and transfer points to other areas. Route #48 currently maintains 15-minute daytime headways during the week. Service improvements scheduled for February 1999 will improve daytime headways on Routes #16 and #359 to every twenty minutes. These improvements are very much appreciated. However, these headways can still allow for a sizeable wait for some passengers, particularly those transferring to or from other routes. As transit service is added in the future, Metro should strive to provide ten-minute headways on these routes.

Provide Signal Priority Treatments for Transit at Congested Intersections Including the Signalized Intersections Along Wallingford Avenue N and Aurora Avenue, and the Intersection of Ravenna Boulevard and N 65th Street:

Signal priority treatments are an emerging technology which reduces transit delays at signalized intersection. The transit vehicle sends a radio-frequency signal to the traffic signal to either extend or hasten the appropriate green phase, thereby getting the bus through the intersection faster. This technology has been in use for many years with emergency vehicles, and is currently used for transit in some areas -- including the City of Bremerton.

Metro is currently testing the technology with an eye towards applying it at selected locations. Their project along Aurora Avenue North from Winona Avenue N to the Snohomish County Border will equip selected METRO buses with devices that will allow intersection signal controllers (computers) to identify oncoming buses. The Seattle Comprehensive Plan includes the intersections listed above on the Transit Priority Network to be given priority for transit improvements. Signal treatments at these locations will improve transit speed and reliability for routes #16, #48, and #359.

Consider rerouting Transit Route #48 From Wallingford Avenue to Green Lake Drive North by Duke's Restaurant:

Increased transit service is an overall benefit to the Green Lake Community. It improves mobility for residents, and may help to reduce private auto traffic and its accompanying problems. However, the standard bus emits noise and exhaust fumes that often harm residents living along the route. Efforts need to be taken to mitigate these impacts.

One particular problem location is found along the two blocks of Wallingford Avenue between 80th Street and 85th Street, a narrow arterial bordered primarily by single-family homes. Along this roadway two bus routes -- Routes #16 and #48 -- converge for a short time. Between the hours of 4 PM and 5 PM, no less than 17 bus runs pass through this section of road on weekdays. One suggestion is to reroute Route #48 away from Wallingford Avenue to continue along Green Lake Drive North as far as Aurora. At 85th Street, the outbound route would turn left off of Aurora to resume its current route west to Greenwood. The return run would retrace these steps in reverse. There are advantages and disadvantages to this suggestion. The reroute would provide a wider distribution of transit service benefits as well as neighborhood impacts in the area immediately north of Green Lake. It would also eliminate a difficult, unprotected left-turn off Wallingford Avenue onto North 85th Street. In contrast, the turns along the proposed route are wider -- generally easier for buses. However, transfers between Routes #48 and #16 would be more difficult requiring bus users to walk an extra block between routes. Students at Blanchet High School and Licton Springs residents would have to walk further to the bus.

Use Quieter Vans Instead of Buses on Low-Ridership Evening Runs Through Residential Areas:

The use of vans and mini-buses should be considered on low-ridership runs late at night. The use of electric trolleys -- which are quieter and cleaner than diesel coaches -- should also be considered.

Create attractive linkages to the RTA in the Roosevelt Urban Village:

The proposed Roosevelt light rail station would be within walking distance of the Green Lake Urban Village. There are two roadways leading directly towards the station - N 65th Street and Weedin Place -- which pass beneath I-5. Consequently they are dark, dull, and dirty. Improvements to the pedestrian corridor would encourage residents and visitors to use the light rail system.

Weedin Place is particularly inhospitable to pedestrians. The lighting is bad, and the pillars supporting the freeway force pedestrians to the far side of the sidewalk. Consequently, walkers are fully visible from the street, making the pedestrian susceptible to crime. Lighting should be improved, and the sidewalks should be widened to extend further into the street to allow pedestrians to walk within full view of the street. The sidewalks along Weedin Place are also quite muddy. There appears to be some sort of drainage problem which deposits sediment on the walkway. These walkways should be cleaned-up, and these drainage problems must be alleviated.

Pillars along Jackson Street where it passes under I-5 in the International District were recently painted alternately red and yellow. It is now much more attractive. The pillars along Weedin Place and N 65th Street should be painted in a similar manner.

Develop an Intra-Seattle rapid transit system. Support the use of SR 99 as a central spine to such a system:

Aurora Avenue N is an attractive corridor for intra-city rapid transit. The corridor connects several urban villages: Aurora Avenue @ 130th Street, Aurora Avenue @ 97th Street, Wallingford, Fremont, Seattle Center, S Lake Union, and Downtown. Improved public transit would also support economic development along Aurora Avenue, and provide an alternative way for visitors to get to the lake.

Possible stops for such a system in the Green Lake community are at the vicinity of N 85th Street, Winona Avenue, and N 62nd Street Multi-modal transfer points could be established at these locations to allow for transfers to local shuttles and crosstown transit.

Provide Direct Transit Service to Ballard and other Major North Seattle Destinations:

The Seattle Comprehensive Plan calls for direct transit connections between designated urban villages. Currently, transit service in North Seattle concentrates on connecting neighborhoods with the major centers of Northgate, the University District, and Downtown Seattle. However, other direct connections are lacking. Most notable is the lack of a direct connection to Ballard, a major employment and residential center designated as a "hub urban village" in the comprehensive plan. The City should encourage Metro to provide direct service between Ballard and the twin residential urban villages of Green Lake and Roosevelt.

The prospect of a possible light rail station in Roosevelt may lead to additional service converging on the rail stop from other parts of Northeast Seattle such as Wedgewood, Maple Leaf, Lake City, Ravenna, and University Village. Such routes should be extended to also serve the East Green Lake Urban Village.

Offer Shuttle Service Around Green Lake to Connect with the Proposed Light Rail Station in Roosevelt. Consider Extending Shuttle to Phinney Ridge, and Meridian (Honey Bear):

The lack of direct east-west transit service for the Green Lake community is an identified concern of residents. Currently, there are east-west routes running along 45th and 85th Streets, but the lake prevents an intervening east-west route along 65th Avenue. Thus, there exists a gap of forty blocks in the transit network. As a result, riders have great difficulty getting between locations in East Green Lake/Roosevelt, and West Green Lake/Phinney Ridge. The need for this connection would increase if a light rail station is established in Roosevelt. A strong connection between the lake and any regional transportation system provides an alternative means for park users from around the city to get there.

KIS IV. IMPROVE TRANSPORTATION SAFETY & MOBILITY IN RESIDENTIAL AREAS

The theme for the Green Lake transportation system is to develop a strategy that addresses the community's traffic congestion problems, enhances pedestrian and bicycle safety and circulation, encourages alternate transportation modes, and maintains community character. A Transportation Strategic Plan has been developed by the teams traffic consultant, portions of this study have been included below for background.

A mail survey conducted in the spring of 1997 identified a number of transportation-related concerns. The highest rated was traffic congestion with 61% reporting it as a "serious problem" (rated 4 or 5 on a scale of 1 to 5). Other concerns in order of importance were: pedestrian safety (59%), bicycle safety (53%), cut-through traffic (52%), speeding (51%), parking availability (41%), and large truck traffic (31%).

TRAFFIC CONGESTION AND SAFETY

On any given sunny afternoon, Green Lake's streets are saturated with cars. The neighborhood boasts one of the most visited parks in the greater Seattle area, Green Lake Park, with more than 2,000,000 users per year (Seattle Department of Parks and Recreation, 1986), attracting cars from all corners of the city -- and beyond. But, this additional traffic exasperates traffic-related problems commonly found urban areas of Puget Sound: congestion, conflicts with pedestrians and bicyclists, and parking shortages. Traffic models developed by City of Seattle show that most roadway sections along Green Lake Way/Drive currently operate at or over capacity during peak hours, and are expected to deteriorate further by year 2010. Winona Avenue North also operates over capacity. Congestion is anticipated to increase on other arterials as well. The absence of a programmatic plan to optimize traffic control and management systems, and effectively manage curb space (parking) use has resulted in undesirable traffic congestion in some areas, particularly on access routes leading to Green Lake Park.

Traffic analysis conducted by City of Seattle as part of its Comprehensive Plan study indicated that roadways within the Green Lake residential urban village, all of which are classified as minor arterials except Woodlawn Avenue from N 65th Street to 1st Avenue NE will operate at acceptable levels of service. Woodlawn Avenue is a collector arterial and is expected to operate under capacity by 2010. East Green Lake Drive N from Sunnyside Avenue N to NE 71st Street is the only minor arterial within the urban village expected to operate at capacity.

The peaceful, secluded home on a quiet residential lane is under increasing assault. Congestion on main arterials causes many drivers to take short-cuts onto neighborhood streets. Many drive beyond the 25 mph usually found on local roads, thereby creating a safety hazard. Many residents are also concerned about the noise resulting from cut-through traffic. Cut-through traffic is of particular concern along the numerous east-west residential streets between Phinney Ridge and Aurora Avenue North, residential collector streets within the northeast corner neighborhood northeast of the Lake between I-5 and E Green Lake Drive N, and along West Green Lake Drive near the bathhouse theater. Truck traffic is of particular concern because of the significant noise and exhaust fumes they emit.

Install Capital Improvements at the Intersection of NE Ravenna Boulevard @ Green Lake Drive/Way to Improve Traffic Flow, and Pedestrian and Bicycle safety. Conduct a Study to Evaluate Design Changes Including the Use of a Traffic Roundabout, Pedestrian Refuge Islands, Chanellization, and Curb Bulbs:

The five-way intersection at NE Ravenna Boulevard @ Green Lake Drive/Way is one of the most congested intersections in the community. Currently, this intersection is controlled by all-way stop signs. This arrangement treats cross street movements more favorably, without lost time during amber and red phases associated with traffic signals. However, the rate at which vehicles enter the intersection is relatively low and, therefore, the total intersection capacity is somewhat limited. The unusual alignment of approaching legs of the intersection, and the associated competing modes of pedestrians and bicycles, adds a high degree of driver confusion as to who has the right of way, thereby adding to delay. Drivers, particularly those new to the park area, need more time to familiarize themselves with the intersection. The confusion and multiplicity of traffic movements is also detrimental to cyclists and pedestrians attempting to navigate the intersection.

One option is a traffic roundabout. Traffic entering the intersection proceeds in a clockwise direction around a large traffic circle until it reaches the appropriate receiving roadway. Entering traffic must yield to traffic already in the circle. The device has been widely used in Australia, Europe, and New England to allow high traffic volumes to negotiate busy intersections.

Installing a roundabout at this intersection is feasible because there is ample space to install it. The roundabout not only might reduce the delay at Ravenna and Green Lake Way intersection, but it also has the potential of reducing delays at Ravenna and Woodlawn intersection due to traffic back ups from Ravenna and Green Lake Way intersection.

The roundabout overcomes many disadvantages of stop signs and traffic signals. There is no sequential assignment of right-of-way and, therefore, no wasted time. Left turns are not subordinated to through traffic. Vehicles enter under yield control instead of stop control and, therefore, have lower headways and higher capacities. Unlike traffic signals, there are no electrical components to malfunction.

Limitations of Roundabouts:
Steady-state entry headways are shorter at traffic signals because of the positive assignment of right-of-way. By using long cycle times to minimize the effects of startup lost time, it is possible under most conditions to achieve higher approach capacities.
For very low-volume applications, AWSC are easier and less expensive to implement.
Since a roundabout operation is not periodic, it is not possible to coordinate the operation of roundabouts on an arterial route to provide smooth progression for arterial flows.
Roundabouts offer the least positive form of control. Each vehicle entering the intersection must yield to all traffic that has already entered.
Roundabouts might impose a new form of traffic control that is not familiar to motorists in Seattle. The effect of this, however, is expected to be temporary.

The intersection lies between Green Lake Park and retail establishments of East Green Lake, so lots of people cross here. The bike lanes going around the park to the north and south converge here to meet with the Ravenna Boulevard lanes. Consequently, any changes to this intersection must adequately accommodate the high volumes of pedestrians and cyclists that are found here. Varying opinions

have been expressed by others regarding how well traffic roundabouts can accommodate non motorized users. This issue must be examined very carefully in any study. If a roundabout were to have seriously negative consequences for cyclists and pedestrians, it should not be installed.

An alternative to a roundabout would be minor curb bulbs, which would reduce crossing distances for pedestrians at a more compact intersection. Narrowing the intersection and adding curb bulbs would minimize pedestrian crossing distance, and provide a refuge for pedestrians at the intersection. If space is available, refuge islands should also be considered. Crosswalks should be highlighted by the use of colored paving materials.

Install Capital Improvements at the Five-Way Intersection of N 50th Street and East Green Lake Way to Improve Traffic Flow, and Pedestrian and Bicycle Safety. Conduct a Study to Evaluate Design Changes Including the Use of a Traffic Roundabout, Bicycle Lanes, Chanellization, and Pedestrian Refuge Islands:

This five-way intersection is another major congestion point in the community. The traffic cycle is very long, so drivers must wait a long time. A roundabout is also an option here. Although pedestrian and bicycle traffic is less than at Ravenna/Green Lake Way, these modes must still be adequately accommodated. The intersection is now somewhat difficult to cross for walkers. The crossing distances are long; and the multiplicity of turning movements bewildering. Pedestrian refuge islands should be considered to enhance the pedestrian environment.

Convert Four-Lane Arterials to Three-Lane Arterials (One In Each Direction with a Two-Way Left-Turn Lane), Specifically Green Lake Way N Near Woodland Park, and North 50th Street. Add All-Day Parking or Bike Lanes with the Extra Space. Add a Pedestrian Refuge Island Around N 52nd Street.

The current four-lane section does not provide any refuge for vehicles entering and exiting the two streets from adjacent driveways. A stopped vehicle waiting to make a turn maneuver might cause an accident because of the high vehicle speeds and limited sight distances at certain locations along Green Lake Way. Converting the current four-lane roadway to a three-lane roadway would reduce potential accidents between turning and on-coming vehicles since turning vehicles would have a turning lane or pocket to wait for adequate gaps in opposing traffic stream before making the maneuver. The three-lane roadway proposal also minimizes the length of crosswalks, therefore, it could provide an opportunity to add curb bulbs and refuge islands for added pedestrian safety at crosswalks. Another advantage is to provide additional space for either 24-hour on-street parking, or bicycle lanes. However, these benefits must be weighed against whether three lanes allow adequate capacity to accommodate traffic volumes.

Conduct a Traffic Study at the Intersection of West Green Lake Way and East Green Lake Way to Evaluate Ways of Facilitating Left-Turns:

This intersection is difficult for vehicles turning left off of W Green Lake Way to go northbound onto E Green Lake Way. Northbound through traffic is heavy, and is bound to get worse as traffic volumes increase. The desirability of a traffic light to facilitate these turns should be evaluated.

Conduct a Traffic Study at the Intersection of Wallingford Avenue N at N 85th Street:

There is no turn pocket or protective phasing for left-turns off of Wallingford Avenue N onto N 85th Street it either direction. As a result, traffic on Wallingford Avenue is often delayed by traffic waiting for a break in traffic to allow them to turn. Currently, there is no space to install an exclusive left-turn lane at this intersection, so the intersection would have to be widened on the north and south legs, or utilize split phasing.

Route #48 is a valuable crosstown route connecting the urban villages of Greenwood, East Green Lake, Roosevelt, and the University District; and also serves the transfer point to Eastside buses at Montlake. It is particularly valuable to commuting university students. The northbound run takes a left-turn off of Wallingford Avenue N onto N 85th Street. However, with no protected left-turn phase or pocket, buses can be delayed by heavy volumes of oncoming southbound traffic. A protected left-turn phase here would improve speed and reliability for northbound buses.

Conduct a Traffic Study at the Intersection of Aurora Avenue N at Winona Avenue:

On the northbound to westbound movement, left turns are allowed and left-turn pocket is provided, but there is no protected phasing. A protected left-turn phase for drivers turning westbound onto Winona could improve traffic safety and access. Left-turns are currently illegal southbound to eastbound. Traffic to destinations along Winona Way such as the PCC often use residential streets as a result. The desirability of a left-turn pocket, with possibly a protected left-turn phase, for southbound traffic should also be studied. Enhancements to bike and pedestrian safety should also be considered.

Promote Traffic Calming on Residential Streets by Installing Traffic Circles, Chicanes, and Speed Humps Through the Existing Process. Place Special Emphasis on Areas with Identified Cut-Through Traffic Problems:

For many years, the City has installed traffic circles and other traffic calming devices at selected locations, primarily at the request of residents. These useful devises discourage cut-trough traffic on residential streets, and encourage slower driving speeds. This plan does not seek to identify specific locations for traffic circles and other devises. This is best left to the existing process which requires broad support from the neighborhood. However, a number of locations are identified where cut-through traffic is a particular problem. These locations should receive priority for allocation of traffic calming devices.

The east slope of Phinney Ridge between Aurora Avenue and Greenwood/Phinney Avenue receives high volumes of cut-through traffic on residential streets running east-west. This traffic should be encouraged to use arterials including N 65th Street and N 80th Street.

Another location is the small area between Winona Avenue N and the lake near the Bathhouse Theater. Drivers use Keen Way N and Stone Avenue N to avoid the light at Aurora Avenue and Winona Avenue. Drivers also speed along W Green Lake Drive. Traffic calming on these roads should be a priority.

Large volumes of cut-through traffic have also been reported in the area northeast of the lake roughly between Blanchet High School and the East Green Lake Urban Village. Many of these trips are by drivers getting to and from I-5.

Residents living in the Meridian neighborhood (near the Honey Bear) are concerned about speeding along N 56th/55th Street. The roadway is very wide, so drivers go too fast. This plan recommends curb bulbs for several intersections between Kensington Place N and Latona Avenue NE (listed under pedestrian improvements). The Wallingford neighborhood planning effort -- which shares this geographic area with Green Lake 2020 -- also urges consideration of other traffic calming measures such as speed bumps and traffic circles. Wallingford's final recommendations for this roadway may be incorporated into the Green Lake 2020 final report. However, a few special considerations are in order for this roadway. It is an arterial, so any calming measures must not be so restrictive as to push traffic onto neighboring residential streets. Furthermore, transit route #16 operates on part of the roadway, so that portion between Kensington Place N and Meridian Avenue N must be open enough to allow the buses to move freely.

Build Landscaped Medians Down the Middle of Linden Avenue North & Green Lake Drive North:

Landscaped medians can help to reduce traffic speeds, provide refuge for pedestrians crossing the street, and enhance the aesthetic appearance of wide streets. On the other hand, they may serve to limit driveway accesses along the roadway by preventing left-turns directly into driveways. SeaTrans is very unlikely to approve any medians if adjacent property owners object to limiting their driveway access.

Nonetheless, there are two locations where landscaped medians might be desirable. Linden Avenue North is a very wide two-lane arterial between North 66th and 73rd Streets. On-street parking currently exists on both sides of the street, and bicycle lanes are also proposed along here. Measurements are needed to determine if all of these needs can be accommodated safely within the existing roadway width, while still allowing room for a median island. However, medians have been previously installed successfully on similar streets such as 8th Avenue NW with the same profile.

Another promising location is Green Lake Drive between Aurora Avenue and Winona Avenue. The median can be installed in underused stretches of the existing two-way left-turn lane running down the middle of the road. A short landscaped median was recently built at the southern end of the road near the lake. Additional medians could be added at other locations. Left-turn pockets should be retained at major left-turning locations including the intersection of Aurora Avenue North, and probably North 80th Street.

Another consideration is an intermittent landscaped median on Green Lake Way/Drive in the urban village. Because of the narrow width of the road, only a narrow median -- perhaps only four feet -- would work. This median might help to slow traffic as it moves through the urban village, provide limited refuge for pedestrians crossing the roadway to and from the lake, and improve the aesthetic appearance of the road.

Conduct a Transportation Study for Aurora Avenue N.

This Study Should Examine Options For Improving: (a) General Traffic Flow and Safety, (b) Transit Speed and Reliability, (c) Pedestrian Safety and Accessibility:

PEDESTRIAN IMPROVEMENTS

Many factors contribute to the high incidence of walking in the Green Lake community: an extensive sidewalk network, short distances to many destinations, and the attraction of Green Lake Park. Therefore, pedestrian safety is of paramount importance, especially for vulnerable populations like children, the elderly, and the disabled. Promoting walking is also beneficial in that it reduces car trips for short errands, and facilitates access to public transit.

The ability to safely cross busy roadways is a very high goal of the Green Lake Community. Signalized crossings are found at a number of locations. However, many crossings are unsignalized, and passing cars do not always stop -- even at designated crosswalks. Many pedestrians are discouraged from walking at all. So, some people are discouraged from walking in the first place. Many pedestrians are unlikely to travel very far out of their way to use safe crossings, so crossing improvements must be frequent enough to satisfy the need for pedestrian circulation.

Crossings to the lake are of the highest concern to Green Lake residents. Traffic gets heavy along Green Lake Drive/Green Lake Way, especially during the summer when many residents also want to use the park. However, most crossing points are unsignalized, and many drivers fail to yield the right of way. For residents west of the lake, Aurora Avenue poses a barrier even more daunting. Other problem arterials include N 50th Street, N 65th Street, and N 80th Street. The intersection of N 65th Street at Latona Avenue N is

offset, so it is especially hazardous to cross for pedestrians. Fremont Avenue is an important north-south non-motorized corridor. A half-street signal currently exists at 85th Street, but crossing treatments are also needed at 80th Street.

A variety of crossing treatments are recommended including curb bulbs, pedestrian refuge islands, enhanced paving materials, half-street signals, and pedestrian-activated flashing light crosswalks. If subsequent engineering investigation may determine that certain treatments are not appropriate for the specified locations, alternative treatments should be considered.

The use of orange flags -- as used in downtown Kirkland -- is another possible strategy. Pedestrians picked them up and carry them across the roadway at major crossing locations; once across the flags are left behind for the next person. The orange flag increases the visibility of the pedestrian. Perhaps flags could be distributed to certain at-risk populations, such as the elderly residents of the Hearthstone.

Another barrier is I-5. The freeway effectively divided Green Lake from its neighbor Roosevelt when built in the 1960s. The remaining roadways crossing under the freeway are noisy, dark, and dirty.

Build Curb Bulbs at Selected Pedestrian Crossings:

Curb bulbs are useful on wide streets with on-street parking to reduce pedestrian crossing distance and calm traffic speeds. However, they should be used sparingly on streets with high truck or bus volumes. Some locations identified for curb bulbs are:

- Winona Avenue, between N 76th Street and Ashworth Avenue N
- Linden Avenue at N 68th Street
- North Green Lake Drive, between Aurora Avenue and Winona Avenue
- Northeast 56th Street, between Kensington Place N and Latona Avenue N
- East Green Lake Way at N 64th Street
- East Green Lake Way at Kenwood Place
- N 65th Street at Latona Way
- Wallingford Avenue North at North 80th Street (with triangle refuge island on south leg)
- East Green Lake Way/Green Lake Drive between 4th Avenue NE and 4th Avenue NE
- Winona Avenue at Linden Avenue and at N 73rd Street
- Woodlawn Avenue at 5th Avenue NE

Install Pedestrian-Activated Flashing Light Crosswalks (Crosswalks that Utilize Lights Embedded in the Pavement Along Either Side of the Crosswalk) at Key Crossing Locations:

This technology has been used with great success in several southern California cities, and in Kirkland. Tests indicate that drivers yield more readily to pedestrians at flashing-light crosswalks than at unimproved crosswalks. They are much less expensive than regular half-street traffic signals ($10,000-15,000 as opposed to $40,000-50,000).

Several locations around the lake have been identified as needing these improvements (listed clockwise around the lake starting at Stroud Avenue):

- N. 78th Street
- Sunnyside Avenue N (north side of the lake)
- NE 72ND Street
- Sunnyside Avenue N (south side of the lake, near the Hearthstone)
- N. 64th Street
- Kenwood Place
- Woodland Park (at least two locations between parking and the lake)

Other recommended locations for flashing-light crosswalks include:

- N 65th Street at Sunnyside Avenue N (across from the elementary school)
- N 65th Street at Latona Avenue N
- N 80th Street at Fremont Avenue N

Conduct a Study to Evaluate Grade-Separated Crossings of Aurora Avenue N such as a Bridge or Tunnel. Study should also evaluate enhancing the existing at-grade crossing at N 68th Street with a refuge island:

Green Lake residents living west of Aurora Avenue strongly desire grade-separated crossings of the highway to the park. The current at-grade crossing near N 69th Street is not considered safe. Some drivers don't notice the crosswalk, and drive through the red light. Refuge for slow pedestrians caught mid-street is inadequate, all there is a gap in the Jersey barrier. An enlarged refuge island at least four-feet wide is needed. A larger refuge island might also make the crossing more noticeable to drivers who occasionally drive through the red light.

A separated crossing will allow users to safely get to the park without waiting for a signal, and without delaying traffic. If a fixed-rail transit system is established along Aurora Avenue, the need for a grade-separated pedestrian crossing would increase. However, there are a number of problems with bridges and tunnels. They are very expensive. Furthermore, the landing areas at either end of a bridge require a lot of space, particularly for the necessary wheelchair ramps. One option is vacating part of a street on the western side of Aurora Avenue, provided suitable access to adjoining properties is maintained.

The waiting time for pedestrians at the existing signal is now excessively long, at least a minute. Independent research indicates that pedestrians have a tendency to jaywalk after waiting at least 30 seconds. The pedestrian signal does not appear to be coordinated with the distant signals further north. Therefore, the waiting time at this signal should be reduced.

Install Pedestrian Refuge Islands at Key Crossing Locations:

Pedestrian refuge islands make it easier for people to cross roadways by breaking the crossing into two segments. Thereby crossing distance is reduced for each leg of the crossing, and pedestrians need only worry about traffic coming from one direction or the other, not both directions at once. A number of locations are recommended for pedestrian refuge islands:

- East Green Lake Way N at West Green Lake Way N (near the golf course)
- East Green Lake Way N around N 52nd street (requires conversion of East Green Lake Way to three lanes)
- Green Lake Drive N at NE 72nd Street & NE 73rd Street
- Green Lake Drive N at Stroud Avenue N
- South leg of Wallingford Avenue N at N 80th Street

Install a Half-Street Pedestrian-Activated Signal Across N 50th Street At 1st Avenue N:

Half-street traffic signals require vehicles to stop on a red indication (just like a typical traffic signal) only after being activated by a pedestrian. There is no protected crossing of busy North 50th Street for 1200i between Sunnyside and Thackery Avenues. Around 1st Avenue, there is a small neighborhood retail pocket with a laundromat and two small stores. A half-street signal is needed here.

Provide Lighting, Landscaping, bike lanes, and other amenities to existing crossings under and over I-5. Expand sidewalk along the south side of Ravenna boulevard under I-5, and both sides of Weedin Place under I-5:

The construction of I-5 in the 1960s effectively split the area in two, dividing Green Lake from the Roosevelt community. Only a few links still remain, but they are not particularly amenable to non-motorized travel across the freeway. Residents on both sides of the freeway place a high priority on improving these non-motorized links to reunite the two neighborhoods. This will become even more important for Green Lake residents if a light rail station is established in Roosevelt.

Three roadways cross underneath I-5 in the vicinity of the park-and-ride lot: Ravenna Boulevard, 65th Street, and Weedin Place. The pedestrian facilities are generally poorly illuminated, dirty, and not at all inviting to pedestrians. Expansive mud flats form across some of sidewalks, indicating some sort of drainage problem which washes mud onto the sidewalks. More lighting is needed, especially on Ravenna Boulevard and Weedin Place.

Large pillars supporting the freeway are placed square in the middle of the sidewalks. This reduces pedestrian visibility, making them more vulnerable to criminal assault. The lack of visibility caused by these pillars also poses a traffic hazard for pedestrians crossing the southbound freeway on-ramp off of Ravenna Boulevard. Expanding the sidewalk on the south side of Ravenna would provide more space for pedestrians to walk in front of the pillars, and cross the on-ramp in fuller view of turning traffic. This would narrow the southeast-bound roadway some, but there would still be more than sufficient width for the one existing traffic lane plus the wide bike lane. However, southbound buses at the nearby bus stop just beyond 7th Avenue would have to pull into traffic before turning onto the freeway.

Construction of a Roosevelt light rail station should include funding for cleaning-up the sidewalks under the freeway, improving lighting, and possibly adding artwork such as murals to make the walkways safer and more inviting to walkers. Furthermore, the pedestrian walk signals on N 65th Street at 8th Avenue North and at Roosevelt Way are too short. The "Don't Walk" signal goes on a full 15 seconds before the west-eastbound traffic signal goes yellow. Pedestrians just getting to the intersection are required to wait through an entire signal for no apparent reason.

There are also two bridges crossing I-5: 1st Avenue Northeast and NE 70th Street. Although both of these streets have sidewalks, they are not especially pleasant to walk across. Adding some landscaping might help to buffer the walkways from traffic to encourage walking. There also may be room for bike lanes on these two bridges. Bike lanes on NE 70th Street could be extended further east across Roosevelt Way to provide a useful bike connection to the lake. The Roosevelt planning group is currently examining this possibility.

Install Colored and/or Textured Paving Materials at all Crossing Points Along Green Lake Way/Drive Between Winona Avenue and N 78th Street, and Within the Residential Urban Village:

Colored and/or textured paving materials serve to notify drivers that they are coming upon a pedestrian crossing. They are also very attractive. They are recommended for the two commercial centers adjoining Green Lake Park at all crossing locations.

Provide Wheelchair Ramps and Other Handicapped Improvements Which Ensure Mobility for Disabled Persons:

Although substantial progress has been made towards providing wheelchair ramps on city streets, most streets are still inaccessible. An inventory of intersections shows that the Green Lake community is no exception to this. Because the list of unimproved street corners is overwhelming, a list of high priority locations has been prepared. A number of factors were considered in selecting these locations: proximity to retail center, community facilities, and transit; potential for providing linkage between neighborhoods; and neighborhood density.

BICYCLE IMPROVEMENTS

Bikes are an increasingly common sight on Green Lake streets. Many residents bicycle for recreation, for short errands, and to get to work. The park attracts additional cyclists from surrounding areas. However, as bicycling increases, so do the conflicts with cars (and pedestrians, too).

The existing system of on-street bike lanes begins at Green Lake, extending around the eastern half of the lake, and funneling down Ravenna Boulevard towards the University District and the Burke-Gilman Trail. On-street bike lanes do not extend around the western half of the lake. The portion of Green Lake Drive between Stroud Avenue and Winona Way, where the westbound lanes end, is a high accident location. Bike lanes are found on the small trail running inside the park. However, this trail only allows travel in one direction (counter-clockwise); and is often crowded with joggers, walkers, pets, and kids. It is not a good facility for experienced cyclists. An important bike trip corridor is south to Fremont to connect with the Burke-Gilman Trail, and the proposed Westlake Trail

into Downtown Seattle. Another regional trail is proposed to the north on the old Interurban right-of-way. As of now, there are special bike facilities to assist connections to either location.

Provide a Separated Bicycle Trail on Linden Avenue as it Crosses Under Aurora Avenue Near the Old Aqua Theater:

A major hazard for bicycles is where Linden Avenue curves under Aurora in the vicinity of N 62nd Street. The road is very narrow all along the approaches to the underpass, and car traffic is busy. In addition, the roadbed is in badly in need of maintenance with many potholes and large cracks, creating an additional hazard for cyclists. There may be sufficient space for a separated bicycle pathway just north of the roadway at the underpass, such a trail could be provided in the open area north of the supporting pillars. However, a portion of the retaining wall would have to be moved back on the western approach to the bridge.

Develop a Major "Woodland Greenway" Connecting the Burke-Gilman Trail from N 34th Street to South Green Lake at the Amphitheater. Additional Connections Would Include Using the Woodland Park Bridges to Phinney Ridge at the Rose Garden, and Linden Avenue N and Fremont Avenue N Reaching North to the Interurban Trail:

Another possibility is on-street bike lanes along East Green Lake Way/Stone Way. To make room for bike lanes, this option would probably require conversion of this arterial from four-lanes to three.

Reconfigure the perimeter of Green Lake Park to include separated bicycle and pedestrian/jogging lanes with improved pedestrian crossings.

A separated bike path along the perimeter of the park would improve safety, particularly where the current bike lanes end near Wallingford Avenue N. A number of bicycle accidents occur here.

Stripe Bicycle Lanes Along Winona Avenue and Linden Avenue Around the West Side of the Lake:

While of great benefit to cyclists, bicycle lanes extend only 2/3 around the lake. Cyclists wishing to continue around the lake must either use the arterial streets of Linden Avenue and Winona Avenue, or move to the Green Lake pathway in the park. Because of

congested conditions, the pathway is not a good option for experienced, adult cyclists wishing to circumnavigate the lake. Furthermore, the path only allows wheeled travel in the counterclockwise direction; clockwise travel is illegal. Cyclists should be encouraged to stay on the arterial street system.

Bicycle lanes are feasible along Linden Avenue/Winona Avenue west of Aurora Avenue. This road has sufficient width for bike lanes. Unfortunately, Winona Avenue between Aurora Avenue and Wallingford Avenue is not wide enough to accommodate bike lanes, so, there would still remain a gap in the continuous lanes around the lake. A number of bicycle accidents have occurred along this roadway section in recent years. Removal of parking on one side of the road would allow for bike lanes, but given the high demand for parking in the area, this doesn't seem feasible.

Install More Bike Racks Around the Lake:

Over the years, the City has installed an impressive quantity of bike racks around the Green Lake community. Unfortunately, bike parking in the park itself is less plentiful. Green Lake Park is a major destination for recreational bicyclists. Several locations have been identified where bike racks should be installed for cyclists including near the old Aqua Theater, the wading pool, and additional parking at the Community Center.

Improve the Vehicle Detector on the East Leg of North Green Lake Drive at Aurora Avenue so It Can Detect Bicycles:

Bike lanes were recently striped on Green Lake Drive North running northwest of the lake. However, cyclists have encountered difficulty getting a green signal to cross Aurora Avenue where the lanes end. Apparently, the signal loop detectors in the turn pocket are too weak to detect a bicycle. This location needs to be improved to allow westbound bicyclists to get a green light to proceed west along North 83rd Street.

PARKING

It's tough to find a parking space, particularly around commercial centers and the park. Many households live in older residences with parking for only one car, or none at all. So, they must park their extra cars on the street. However, residents must compete for parking with other drivers patronizing the park or local businesses. While the lack of parking is an annoyance to many residents, it can threaten the economic survival of many businesses. Some businesses have only a few on-street stalls fronting their storefronts, most of their business must come from walk-in customers. However, the desire to increase the supply of parking must be weighed against the need to encourage use of transportation alternatives. Too plentiful a supply of parking will attract additional single-occupant car trips to the community -- thereby exasperating other auto-related problems (congestion, pollution, etc.) -- and undermine efforts to promote transit use.

Balancing these two competing goals has been one of the most difficult challenges in the preparation of this transportation plan. A number of ideas were considered throughout the planning process including installation of additional parking meters, and higher off-

street parking requirements for multi-family developments. These proposals generated strong feelings both pro and con. This lack of consensus one way or the other compelled Green Lake 2020 to drop these ideas from the final plan. This in no way infers that Green Lake 2020 is opposed to these ideas; this planning effort takes a neutral position, for now. However, as Green Lake becomes an increasingly attractive destination, pressure on existing parking facilities will increase to intolerable levels -- unless transportation alternatives are aggressively promoted.

Encourage Use of the Roosevelt Park-and-Ride on Nights and Weekends. Improve Transit Frequency From the Park-and-Ride Into the Urban Village. Allow Free or Reduced Fare Rides for Those Using the Park and Ride:

King County METRO operates a park and ride lot at the southwest corner of 8th Avenue NE and N 65th Street. The facility is heavily used by commuters during the day, but virtually lies empty on weekends and in the evenings. Green Lake 2020 Transportation Committee should coordinate with King County Metro to publicize the facility for the park users on weekends and in the evening. A shuttle service might be needed to ferry people to/from the park and ride lot to the Lake to encourage its use.

Study the need & possibility for residential parking zones to help limit parking by non-residents through the existing process:

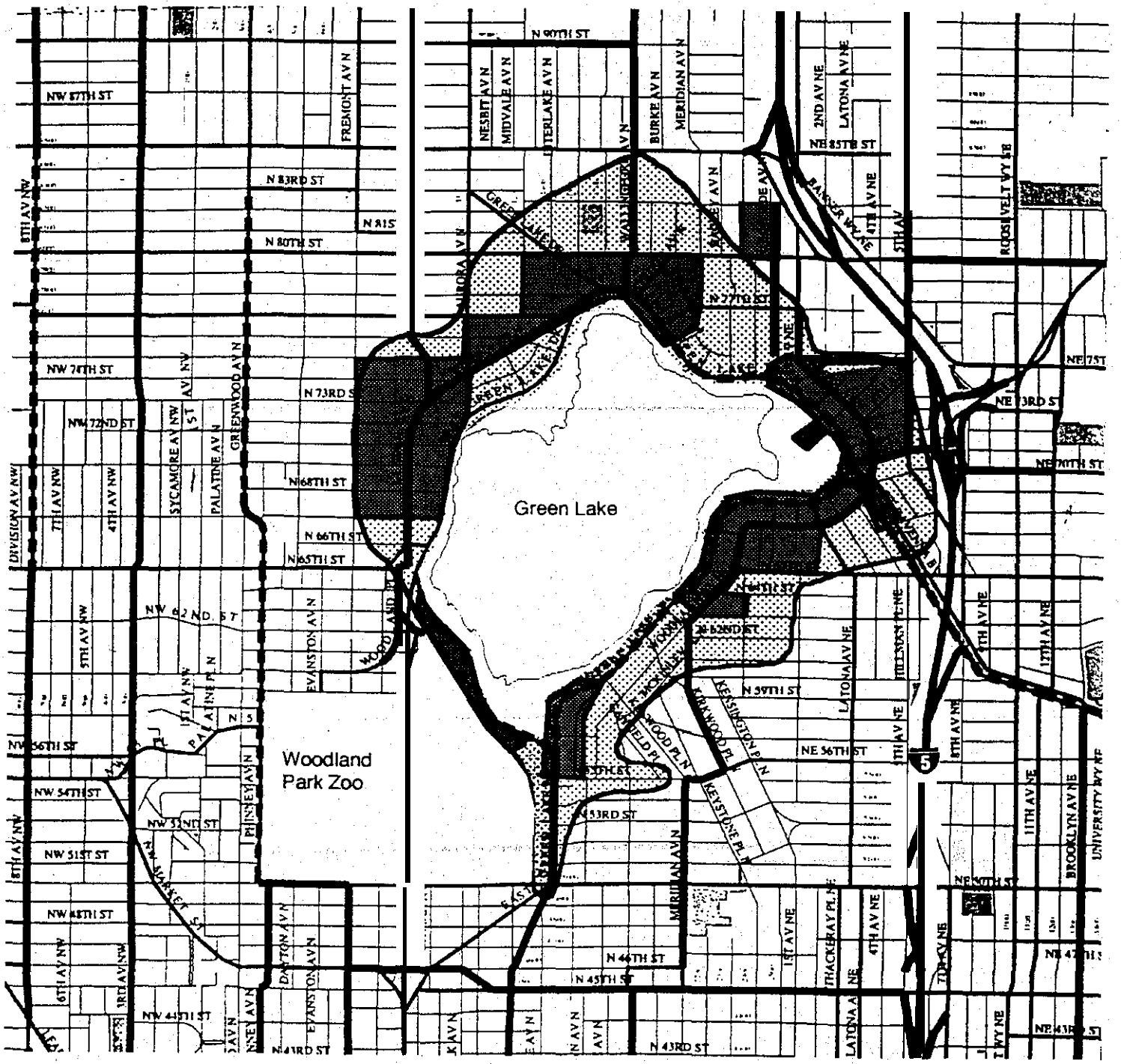
Residential parking zones are a useful tool to preserve on-street parking for the people who live nearby. Parking problems are particularly acute within a few blocks of Green Lake Park.

Narrow the Restricted Times at Underutilized Truck Loading Zones to Allow General Parking:

A significant proportion of curb space within the East Green Lake Urban Village is devoted to truck loading zones. The spaces are typically restricted to trucks all-day. These spaces appear to be underutilized. If restricted times were shortened, perhaps to the morning, this would allow customers to use these spots during the afternoon. Such a change would require the approval of the adjacent business owner.

Surface parking is ugly and detracts from the pedestrian-friendly atmosphere that the community desires for its commercial centers. Development regulations should encourage the provision of underground parking for new developments.

Appendix A.1 Parking Inventory Map



Parking inventory
Greenlake 2020

Study Method xplanation:

The study was conducted on two days, an overcast Thursday (June 18, 1998-- approximately 6:30p.m.) and on a sunny Saturday (June 20, 1998-- approximately 2:30p.m.). On the graphic, me internal circle reprsents the 6/1 8/98 parking situation and the outer circle the 6/20/98 parking situation. A windshield survey of each block was conducted assessing the extent of parking unavailability. Restricted parking was given fOr any block where less man 20°A of parking was available. These areas were generalized to form the twoareas.

Findings:

As seen in me graphic, the weekday parking situation on a "non-peak/cloudy" day is typically worse in high use areas (retail are as) and streets nearest to the lake. On "peak/sun ny", weekends the peak extends farther into neighborhood areas as parking fills along areas closest to retail areas and the lake. Note on Satudays some vehicles perk in unrestricted areas adjacent to me retail to avoid parking meters

Legend

m Area of parking on a cloudy weekend day in July

Area of parking on a warm sunny day in July

Study by John Davies, Greenlake 2020 Traffic and Transportation Committee

Appendix A. 2 List of Proposed Locations for Wheel Chair Ramps

PRIORITY LOCATIONS FOR
HANDICAPPED ACCESS IMPROVEMENTS

Wheelchair Ramps:

NE 65th Street (4th Avenue NE to NE Ravenna Boulevard)	6 ramps (3 new, 3 to be replaced)
Latona Avenue (NE 50th Street to NE 65th Street)	48 ramps
N 65th Street (Woodlawn Ave. NE to Sunnyside Ave. N)	13 ramps
Meridian Avenue N (N 55th Street to N 50th Street)	12 ramps
N 50th Street (Woodlawn Avenue N to Meridian Avenue N)	10 ramps (6 new, 4 to be replaced)
N 50th Street (Eastern Avenue N to Thackery Avenue N)	6 ramps
NE Ravenna Boulevard (I-5 to 9th Avenue NE)	several, to be coordinated with Roosevelt
5th Avenue NE (NE 71st Street to NE Maple Leaf Place)	17 ramps
NE Maple Leaf Place @ NE 73rd Street	3 ramps
Woodlawn Avenue NE (4th Avenue NE to NE 75th Street)	6 ramps
Latona Avenue N @ 2nd Avenue NE and Woodlawn Ave. NE	3 ramps
Woodlawn Avenue NE @ 5th Avenue NE	1 ramp
Green Lake Drive N (Aurora Avenue N to Stone Avenue N)	8 ramps
Winona Avenue N (Stone Avenue N to Ashworth Avenue N)	9 ramps
N 50th Street (Dayton Avenue N tp East Green Lake Way N)	14 ramps (13 new, 1 to be replaced)
Aurora Avenue N (West Green Lake Drive N to N 78th Street)	13 ramps
Linden Avenue N (N 66th Street to N 73rd Street)	23 ramps
Linden Avenue N (N 74th Street to N 79th Street)	18 ramps
Fremont Avenue N (N 81st Street to N 84th Street)	6 ramps
W Green Lake Dr N (between Stone Avenue N and N 76th St)	2 ramps
Stone Avenue N @ N 79th Street (crosswalk to school)	2 ramps
NE 71st Street @ 6th Avenue NE	phone pole obstruction

Appendix A.3 Green Lake 2020 Neighborhood Plan Traffic Analysis o Selected Intersections, by K2 & Associates, Traffic Consultants